IN THE CLAIMS

Claim 1. (Currently Amended) A packet receiving method for use on a packet-switching network for handling ~~each~~ received packet, comprising the steps of:

allocating a descriptor and a data buffer, the descriptor for recording a link status between the descriptor and the data buffer and a reception status of a packet, and the data buffer for storing the packet, and [[the]] a size of the data buffer being fixed;

activating an early interrupt mode and setting a logical segmentation size value;

dividing the data buffer by the logical segmentation size value into a plurality of segments, and setting an early receiving interrupt signal and a ready interrupt signal according to the logical segmentation size value;

in response to the early receiving interrupt signal, reading a part of the packet stored in the data buffer, and not performing a write-back operation after reading the part of the packet stored in the data buffer; and

in response to the ready interrupt signal, retrieving and forwarding a remaining part of the packet stored in the data buffer.

Claim 2. (Currently Amended) The method of claim 1, further comprising the step of: performing [[a]] the write-back operation on the descriptor after the whole packet stored in the data buffer has ~~have~~ been forwarded so as to reset the descriptor.

Claim 3. (Previously Presented) The method of claim 1, further comprising the step of: asserting the ready interrupt signal when the whole packet has completely been moved to the data buffer.

Claim 4. (Currently Amended) The method of claim 1, further comprising the step of:

moving a data amount of the packet into the data buffer; and

asserting the early receiving interrupt signal[[,]] when the data amount of the packet already moved into the data buffer exceeds one of the segments.

Claim 5. (Original) The method of claim 1, wherein the packet-switching network is Ethernet.

Claim 6. (Currently Amended) A packet receiving apparatus, comprising:

a descriptor for handling a packet;

a data buffer linked to the descriptor for storing the packet, wherein the data buffer has a fixed size and is partitioned into a plurality of segments, with each dividing point being linked to an early receiving interrupt signal and the end of the packet being linked to an a ready interrupt signal; and

a controller for receiving the packet, when the controller has moved a specified length of the packet above [[the]] a logical segmentation size value to the data buffer, asserting the early receiving interrupt signal; when the controller has completely moved the whole packet to the data buffer, asserting the ready interrupt signal;

in response to the early receiving interrupt signal, starting to read the packet stored in the data buffer; and in response to the ready interrupt signal, retrieving and forwarding [the] a remaining part of the packet stored in the data buffer.

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Claim 7. (Currently Amended) The packet receiving apparatus of claim 6, wherein the controller performs a write-back operation on the descriptor after ~~all the packet data~~ the whole packet stored in the data buffer has ~~have~~ been forwarded so as to reset the descriptor.

Claim 8. (Currently Amended) A packet receiving method for use on a packet-switching network for handling a plurality of received packets, comprising the steps of:

allocating one descriptor and a corresponding data buffer, the descriptor for recording a link status between the descriptor and the data buffer and a reception status of a packet, and the data buffer for storing the packet;

setting a logical segmentation size value and dividing the data buffer into several segments according to the logical segmentation size;

determining whether the packet has completely been received;

if No:

asserting an early receiving interrupt signal, when a length of the packet above the logical segmentation size value has been moved to the data buffer;

checking the reception status of the packet in response to the early receiving interrupt signal;

retrieving a part of the packet stored in the data buffer when the reception status of the packet indicates that the packet has not completely been moved to the data buffer; and

retrieving a remaining part of the packet stored in the data buffer when the reception status of the packet indicates that the whole packet has completely been moved to the data buffer; and

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if YES:

asserting a ready interrupt signal and performing a write-back operation on the descriptor so as to reset the reception status of the packet when the whole packet has completely been moved to the data buffer; and

retrieving the remaining part of the packet in response to the ready interrupt signal.

Claim 9. (Original) The method of claim 8, wherein the packet-switching network is Ethernet.

Claim 10. (Currently Amended) A method for processing packets, comprising the steps of:

~~allocating a plurality of descriptors and~~ initializing a plurality of data buffers for storing the packets and a plurality of descriptors, each of said descriptors being ~~corresponding to~~ indicative of ~~one and only~~ one of said data buffers ~~for receiving one and only one said packet at the same~~ time, wherein each said descriptor has a packet reception status and a link status recording information between the descriptor and a corresponding data buffer indicated by the descriptor ~~records a reception status of one said packet and a link status between said descriptor and one corresponding said data buffer, wherein each said data buffer is used to store one said packet~~, wherein each said data buffer has a fixed size; ~~and~~

~~processing said packets by said descriptors and said data buffers, the steps of processing each said packet by one said descriptor and one said data buffer comprising the steps of:~~

setting a logical segmentation size value;

dividing each of said data buffers by said logical segmentation size value into a plurality of segments ~~in according to said logical segmentation size value~~;

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receiving ~~at least partial~~ a packet and storing ~~the received part of~~ said packet in one of said data buffer~~s~~; ~~and~~

outputting a segment of said one of said data buffers when the segment is fully filled by a partial packet; and ~~at least a portion of said packet from said buffer in the unit of said segments~~

performing a write-back operation when the packet is totally outputted.

Claims 11-15. (Cancelled)

Claim 16. (Currently Amended) An apparatus for processing a plurality of packet~~s~~, comprising:

a plurality of descriptor~~s for handling a plurality of packets~~, wherein each of said descriptor~~s~~ handles one ~~and only one said~~ of the packet~~s~~ at ~~the same~~ a time;

a plurality of data buffers for storing ~~said~~ the packets, wherein each of said data buffer~~s~~ has a fixed size and is linked to one ~~and only one~~ of said descriptor~~s~~; and

a controller for controlling said descriptors and said data buffers, wherein said controller divides each of said data buffer~~s~~ into a plurality of segments [[in]] according to a logical segmentation size value, wherein said controller control~~s~~ each of said descriptors to receive at least a part of ~~one said~~ a corresponding packet and to store said ~~date buffer~~ received part in one ~~and only one~~ corresponding [[said]] data buffer, said controller ~~controllers~~ also control~~s~~ each of said descriptor~~s~~ to output a segment of one corresponding data buffer when the segment is fully filled by a partial packet and performs a write-back operation when the corresponding packet is

totally outputted, ~~at least a portion of said packet from corresponding said buffer in the unit of~~

~~said segments~~

wherein said descriptors and said data buffers are connected to a network card for receiving said packets, and said data buffers at least are in a system memory of a host computer where said network card is located.

Claims 17-20. (Cancelled)

Claim 21. (New) The method of claim 10, further comprises:

asserting an early receiving interrupt signal when the partial packet exceeds a capacity of the segment.

Claim 22. (New) The method of claim 10, wherein packets are received through a network card and said data buffers are located in a system memory of a host computer wherein said network card is located.

Claim 23. (New) The method of claim 10, wherein the fixed size of the data buffer is the same as a maximum size of a standard packet.

Claim 24. (New) The method of claim 10, further comprises:

adjusting said logical segmentation size value.

Claim 25. (New) The apparatus of claim 16, wherein an early receiving interrupt signal is asserted by said controller when the partial packet exceeds a capacity of the segment.

Claim 26. (New) The apparatus of claim 16, wherein the fixed size of the data buffer is the same as a maximum size of a standard packet and said logical segmentation size value is adjustable.